

WHAT IS CLAIMED IS:

1. An optical transmission device comprising:
 - a current source for outputting a drive current;
 - a semiconductor laser for converting said drive current into a stimulated emission light and outputting the same;
 - a drive circuit for converting a transmission data signal and a shading control signal for interrupting light emission into a modulation control signal and outputting the same; and
 - an optical modulator for receiving said stimulated emission light and said modulation control signal and changing an amount of transmission of said stimulated emission light by said modulation control signal thereby generating transmission light signal.
2. An optical transmission device comprising:
 - a current source for outputting a drive current;
 - a semiconductor laser for converting the drive current into a stimulated emission light and outputting the same;
 - a drive circuit for converting a transmission data signal into a modulation control signal and outputting the same,
 - an optical modulator for receiving said stimulated emission light and a shading control signal for interrupting light emission and producing and

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outputting transmission signal light by changing an amount of transmission of said stimulated emission light according to said shading control signal; and

a shading element for receiving said transmission signal light and a shading control signal for interrupting light emission and interrupting the transmission of said transmission signal light according to said shading control signal.

3. An optical transmission device according to claim 2, further comprising:

a temperature detector for detecting a temperature of said semiconductor laser and producing and outputting a temperature detection signal;

an optical wavelength setting circuit for setting and outputting an optical wavelength setting signal;

an optical wavelength stabilization circuit for comparing said optical wavelength setting signal with said temperature detection signal thereby generating and outputting an optical wavelength control signal;

a shading judging circuit for judging a difference between said optical wavelength setting signal and said temperature detection signal thereby generating and outputting a shading judging signal; and

an operator for receiving a shading setting signal and said shading judging signal thereby generating and outputting said shading control signal.

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4. An optical transmission device according to claim 3, further comprising, in place of said temperature detector, a monitor element for detecting an optical wavelength of a part of said stimulated emission light thereby generating an optical wavelength detection signal and outputting the same to said optical wavelength stabilization circuit and said shading judging circuit.

5. An optical transmission device according to claim 1 wherein said driving current of said current source is controlled by an optical strength control signal and said optical transmission device further comprises:

a photo detector for detecting an optical strength from a part of said stimulated emission light thereby generating and outputting an optical strength detection signal;

an optical strength setting circuit for producing and outputting an optical strength setting signal; and

an optical strength stabilization circuit for comparing said optical strength setting signal with said optical strength detection signal thereby generating and outputting said optical strength control signal.

6. An optical transmission device according to claim 2 wherein said driving current of said current source is controlled by an optical strength control

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signal and said optical transmission device further comprises:

a photo detector for detecting an optical strength from a part of said stimulated emission light thereby generating and outputting an optical strength detection signal;

an optical strength setting circuit for producing and outputting an optical strength setting signal; and

an optical strength stabilization circuit for comparing said optical strength setting signal with said optical strength detection signal thereby generating and outputting said optical strength control signal.

7. An optical transmission device according to claim 3 wherein said driving current of said current source is controlled by an optical strength control signal and said optical transmission device further comprises:

a photo detector for detecting an optical strength from a part of said stimulated emission light thereby generating and outputting an optical strength detection signal;

an optical strength setting circuit for producing and outputting an optical strength setting signal; and

an optical strength stabilization circuit for comparing said optical strength setting signal with

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said optical strength detection signal thereby generating and outputting said optical strength control signal.

8. An optical transmission device according to claim 4 wherein said driving current of said current source is controlled by an optical strength control signal and said optical transmission device further comprises:

a photo detector for detecting an optical strength from a part of said stimulated emission light thereby generating and outputting an optical strength detection signal;

an optical strength setting circuit for producing and outputting an optical strength setting signal; and

an optical strength stabilization circuit for comparing said optical strength setting signal with said optical strength detection signal thereby generating and outputting said optical strength control signal.

9. An optical transmission device according to claim 3 further comprising an external control interface circuit for receiving a control logic signal for controlling an optical strength, an optical wavelength and the light shading, the optical wavelength detection signal and the optical strength detection signal and producing an optical wavelength changing signal for controlling the optical wavelength

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setting signal, an optical strength changing signal for controlling the optical strength setting signal and the shading setting signal.

10. An optical transmission device according to claim 4 further comprising an external control interface circuit for receiving a control logic signal for controlling an optical strength, an optical wavelength and the light shading, the optical wavelength detection signal and the optical strength detection signal and producing an optical wavelength changing signal for controlling the optical wavelength setting signal, an optical strength changing signal for controlling the optical strength setting signal and the shading setting signal.

11. An optical transmission device according to claim 5 further comprising an external control interface circuit for receiving a control logic signal for controlling an optical strength, an optical wavelength and the light shading, the optical wavelength detection signal and the optical strength detection signal and producing an optical wavelength changing signal for controlling the optical wavelength setting signal, an optical strength changing signal for controlling the optical strength setting signal and the shading setting signal.

12. An optical transmission device according to claim 6 further comprising an external control interface circuit for receiving a control logic signal

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for controlling an optical strength, an optical wavelength and the light shading, the optical wavelength detection signal and the optical strength detection signal and producing an optical wavelength changing signal for controlling the optical wavelength setting signal, an optical strength changing signal for controlling the optical strength setting signal and the shading setting signal.

13. An optical transmission device according to claim 7 further comprising an external control interface circuit for receiving a control logic signal for controlling an optical strength, an optical wavelength and the light shading, the optical wavelength detection signal and the optical strength detection signal and producing an optical wavelength changing signal for controlling the optical wavelength setting signal, an optical strength changing signal for controlling the optical strength setting signal and the shading setting signal.

14. An optical transmission device according to claim 8 further comprising an external control interface circuit for receiving a control logic signal for controlling an optical strength, an optical wavelength and the light shading, the optical wavelength detection signal and the optical strength detection signal and producing an optical wavelength changing signal for controlling the optical wavelength setting signal, an optical strength changing signal for

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controlling the optical strength setting signal and the shading setting signal.

15. An optical transmission system comprising a plurality of optical transmission devices each for converting a transmission electrical signal into a transmission light signal, a multiplexer for multiplexing a plurality of transmission light signals having different wavelengths thereby generating and producing an optical wavelength division multiplexing light signal, an optical demultiplexer for demultiplexing said optical wavelength division multiplexing light signal into a plurality of receiving light signals having different wavelengths, respectively, and a plurality of optical receivers for converting said receiving light signals into receiving electrical signals, respectively, wherein said optical transmission device comprises:

a current source for outputting a drive current;

a semiconductor laser for converting the drive current into a stimulated emission light and outputting the same;

a drive circuit for converting a transmission data signal into a modulation control signal and outputting the same;

an optical modulator for receiving said stimulated emission light and a shading control signal for interrupting light emission and producing and

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outputting transmission signal light by changing an amount of transmission of said stimulated emission light according to said shading control signal; and

a shading element for receiving said transmission signal light and a shading control signal for interrupting light emission and interrupting the transmission of said transmission signal light according to said shading control signal.

16. An optical transmission system according to claim 15, wherein said optical transmission device further comprises:

a temperature detector for detecting a temperature of said semiconductor laser and producing and outputting a temperature detection signal;

an optical wavelength setting circuit for setting and outputting an optical wavelength setting signal;

an optical wavelength stabilization circuit for comparing said optical wavelength setting signal with said temperature detection signal thereby generating and outputting an optical wavelength control signal;

a shading judging circuit for judging a difference between said optical wavelength setting signal and said temperature detection signal thereby generating and outputting a shading judging signal; and

an operator for receiving a shading setting signal and said shading judging signal thereby

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generating and outputting said shading control signal.

17. An optical transmission system according to claim 16, wherein said optical transmission device further comprises, in place of said temperature detector, a monitor element for detecting an optical wavelength of a part of said stimulated emission light thereby generating an optical wavelength detection signal and outputting the same to said optical wavelength stabilization circuit and said shading judging circuit.

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